

Attorney Docket No.: 0160112
Application Serial No.: 10/799,522

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List of Claims:

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1. (currently amended) A method of processing speech comprising:
obtaining an input speech signal;
decomposing said input speech into a voiced portion and a noise portion using an adaptive separation component having a filter cut-off frequency;
processing said voiced portion of said input speech to obtain a first set of parameters using analysis by synthesis approach; and
processing said noise portion of said input speech to obtain a second set of parameters using open loop approach;
transmitting said first set of parameters, said second set of parameters and a voicing index to a decoder, wherein said voicing index provides said filter cut-off frequency to said decoder for signal composition.
2. (original) The method of claim 1, wherein said input speech signal excludes background noise.
3. (original) The method of claim 1, wherein said separation component is a lowpass filter.
4. (original) The method of claim 3, wherein bandwidth of said lowpass filter is dependent upon a characteristic of said input speech.

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

5. (original) The method of claim 4, wherein said characteristic of said input speech is pitch correlation.

6. (original) The method of claim 4, wherein said characteristic of said input speech is gender of a person uttering said input speech.

7. (original) The method of claim 1, wherein said analysis by synthesis approach is a Code Excited Linear Prediction (CELP) process.

8. (original) The method of claim 1, wherein said first set of parameters comprises pitch of said voiced portion of said input speech.

9. (original) The method of claim 1, wherein said first set of parameters comprises excitation of said voiced portion of said input speech.

10. (original) The method of claim 1, wherein said first set of parameters comprises energy of said voiced portion of said input speech.

11. (original) The method of claim 1, wherein said second set of parameters comprises characteristics of a voicing index of said input speech.

12. (cancelled)

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

13. (currently amended) The method of claim [[12]] 1, wherein said decoder device uses said information regarding said first set of parameters to synthesize said voiced portion of said input speech.

14. (cancelled)

15. (currently amended) The method of claim [[14]] 1, wherein said decoder device uses said information regarding said second set of parameters to synthesize said noise portion of said input speech.

16. (cancelled)

17. (currently amended) An apparatus for processing speech comprising:
an input speech signal;
an adaptive separation module having a filter cut-off frequency for separating said input speech into a voiced portion and a noise portion;
an analysis-by-synthesis module for processing said voiced portion of said input speech to obtain a first set of parameters; and
an open loop analysis module for processing said noise portion of said input speech to obtain a second set of parameters;
a transmitting module for transmitting said first set of parameters, said second set of parameters and a voicing index to a decoder, wherein said voicing index provides said filter cut-off frequency to said decoder for signal composition.

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

18. (original) The apparatus of claim 17, wherein said input speech signal excludes background noise.

19. (original) The apparatus of claim 17, wherein said separation module is a lowpass filter.

20. (original) The apparatus of claim 19, wherein bandwidth of said lowpass filter is dependent on a characteristic of said input speech.

21. (original) The apparatus of claim 20, wherein said characteristic of said input speech is pitch correlation.

22. (original) The apparatus of claim 20, wherein said characteristic of said input speech is gender of a person uttering said input speech.

23. (original) The apparatus of claim 17, wherein said analysis-by-synthesis processor is a Code Excited Linear Prediction (CELP) process.

24. (original) The apparatus of claim 17, wherein said first set of parameters comprises pitch of said voiced portion of said input speech.

25. (original) The apparatus of claim 17, wherein said first set of parameters comprises

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

excitation of said voiced portion of said input speech.

26. (original) The apparatus of claim 17, wherein said first set of parameters comprises energy of said voiced portion of said input speech.

27. (original) The apparatus of claim 17, wherein said second set of parameters comprises characteristics of a voicing index of said input speech.

28. (cancelled)

29. (currently amended) The apparatus of claim [[28]] 17, wherein said decoder device uses said information regarding said first set of parameters to synthesize said voiced portion of said input speech.

30. (cancelled)

31. (currently amended) The apparatus of claim [[30]] 17, wherein said decoder device uses said information regarding said second set of parameters to synthesize said noise portion of said input speech.

32. (cancelled)

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

33. (currently amended) An apparatus for synthesizing speech comprising:
- a first module for obtaining a first set of parameters regarding a voiced portion of an input speech signal;
- a second module for obtaining a second set of parameters regarding a noise portion of said input speech signal;
- a third module for obtaining a voicing index, wherein said voicing index provides a filter cut-off frequency for signal composition;
- a [[third]] fourth module for synthesizing said voiced portion of said input speech signal from said first set of parameters;
- a [[fourth]] fifth module for synthesizing said noise portion of said input speech signal from said second set of parameters; and
- a [[fifth]] sixth module for combining said synthesized voiced portion and said synthesized noise portion based on said filter cut-off frequency for signal composition to produce a synthesized version of said input speech.

34. (original) The apparatus of claim 33, wherein said first set of parameters comprises pitch of said voiced portion of said input speech.

35. (original) The apparatus of claim 33, wherein said first set of parameters comprises excitation of said voiced portion of said input speech.

36. (original) The apparatus of claim 33, wherein said first set of parameters comprises energy of said voiced portion of said input speech.

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

37. (cancelled)

38. (cancelled)

39. (original) The apparatus of claim 33, wherein said synthesized noise portion is estimated.

40. (currently amended) A method for synthesizing speech comprising:
obtaining a first set of parameters regarding a voiced portion of an input speech signal;
obtaining a second set of parameters regarding a noise portion of said input speech signal;
obtaining a voicing index, wherein said voicing index provides a filter cut-off frequency for signal composition;
synthesizing said voiced portion of said input speech signal from said first set of parameters;
synthesizing said noise portion of said input speech signal from said second set of parameters; and
combining said synthesized voiced portion and said synthesized noise portion based on said filter cut-off frequency for signal composition to produce a synthesized version of said input speech.

41. (original) The method of claim 40, wherein said first set of parameters comprises pitch of said voiced portion of said input speech.

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

42. (original) The method of claim 40, wherein said first set of parameters comprises excitation of said voiced portion of said input speech.

43. (original) The method of claim 40, wherein said first set of parameters comprises energy of said voiced portion of said input speech.

44. (cancelled)

45. (cancelled)

46. (original) The method of claim 40, wherein said synthesized noise portion is estimated.

47. (cancelled)

48. (previously presented) The method of claim 1, wherein said filter cut-off frequency is communicated to said decoder using a plurality of bits in said voicing index to indicate to said decoder which filter to use for said signal decomposition.

49. (currently amended) The method of claim [[47]] 1, wherein said voicing index defines a plurality of low pass filters.

Attorney Docket No.: 0160112
Application Serial No.: 10/799,533

50. (cancelled)

51. (previously presented) The apparatus of claim 17, wherein said filter cut-off frequency is communicated to said decoder using a plurality of bits in said voicing index to indicate to said decoder which filter to use for said signal decomposition.

52. (currently amended) The apparatus of claim [[51]] 17, wherein said voicing index defines a plurality of low pass filters.

53. (new) The apparatus of claim 33, wherein said filter cut-off frequency is communicated using a plurality of bits in said voicing index to indicate which filter to use for said signal decomposition.

54. (new) The apparatus of claim 33, wherein said voicing index defines a plurality of low pass filters.

55. (new) The method of claim 40, wherein said filter cut-off frequency is communicated using a plurality of bits in said voicing index to indicate which filter to use for said signal decomposition.

56. (new) The method of claim 40, wherein said voicing index defines a plurality of low pass filters.